

**REMARKS**

**I. INTRODUCTION**

Applicants gratefully acknowledge the Examiner's confirmation that claims 1, 9 and 12-17 are allowed, and that claims 2, 5-7, 11 and 18-23 would be allowed if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph as set forth in the Final Office Action. In addition, Applicants thank the Examiner for participating in an interview with Applicants' representative on January 21, 2010 (the "Interview").

Claims 2, 36 and 40 have been cancelled, without prejudice. Claims 1, 11, 18, 19, 23-25, 30, 31, 33 and 44 has been amended above to clarify the subject matter recited therein, but not due to any issues relating to patentability thereof. The amendments to the claims were made to place the application in condition for allowance.

Accordingly, claims 1, 5-7, 9, 11-31, 33-35 and 41-44 are under consideration in the above-referenced application. Provided above, please find a claim listing indicating the cancellation of claims 2, 36 and 40, the amendments to claims 1, 11, 18, 19, 23-25, 30, 31, 33 and 44, and the status of other claims on separate sheets so as to comply with the requirements set forth in 37 C.F.R. § 1.121. It is respectfully submitted that no new matter has been added.

**II. REJECTION UNDER 35 U.S.C. § 112 SHOULD BE WITHDRAWN**

Claims 2, 5-7, 11, 18-31 and 33 stand finally rejected under 35 U.S.C. § 112, second paragraph as being allegedly indefinite.

Regarding the § 112, second paragraph rejection of claim 2, this claim has been cancelled without prejudice. Accordingly, this rejection of claim 2 is now moot, and should therefore be withdrawn.

With respect to the § 112, second paragraph rejection of claims 11, 19, 25 and 31, these claims have been amended to recite that the axial scan by the radiation source causes the tissue to change at least one of certain properties of the axial scan radiation. Thus, these claims each recite a further limitation on the respective base claims that the scan causes the tissue to change properties of the axial scan radiation. Accordingly, this rejection of claims 11, 19, 25 and 31 is now moot, and should therefore be withdrawn.

Concerning the § 112, second paragraph rejection of claim 18, this claim have been amended to recite that that the axial scan is performed by "a radiation source", thereby addressing the antecedent basis issue. Accordingly, this rejection of claim 18 is now moot, and should therefore be withdrawn.

As to the § 112, second paragraph rejection of claims 24 and 30, the Examiner is not clear as to how the recitations provided in the last three lines thereof effect the scope of "causing a performance" procedure. However, it should be clear that at least this procedure is further effected in the last three lines as performing the axial scan using the radiation source which is "a swept wavelength optical source" and/or "a broad bandwidth light source" as explicitly provided therein, and thus abundantly clear. Accordingly, for at least such reasons, this rejection of claims 24 and 30 should be withdrawn.

Regarding the § 112, second paragraph rejection of claims 27 and 33, these claims have been amended to remove the recitation of “a light source” and other associated language therefor. Accordingly, this rejection of claims 27 and 33 is now moot, and should therefore be withdrawn.

Therefore, for at least the reasons as set forth herein above, the rejection of claims 2, 5-7, 11, 18-31 and 33 under 35 U.S.C. §112, second paragraph should be withdrawn.

### **III. REJECTION UNDER 35 U.S.C. § 101 SHOULD BE WITHDRAWN**

Claims 24-31 and 33-35 stand finally rejected under 35 U.S.C. § 101 as being allegedly being directed to non-patentable subject matter. (See Final Office Action dated December 23, 2009, pp. 2-3). Applicants respectfully assert that amended independent claims 18, 24 and 30, and claims 19-23, claims 25-29 and claims 31, 32 and 33-35, which depend from claims 18, 24 and 30, respectively, are certainly directed to patentable subject matter under 35 U.S.C. § 101 for at least the following reasons.

The Examiner asserts that claims 24-30 which are directed to “a computer-accessible storage medium” and claims 30, 31 and 33-35 which are directed to “a software arrangement” are improperly drawn to non-statutory subject matter. (Final Office Action, p. 3, Ins. 1-3 and 8-16). The reason provided by the Examiner for maintaining this 35 U.S.C. § 101 rejection is that using a broadest interpretation, these claims can be directed to *non-tangible and transitory* embodiments, such as carrier waves which have been held to be non-statutory.

As the Examiner shall ascertain, independent claim 24 has been amended to recite:

“A tangible computer-accessible storage medium storing a software program for identifying characteristics of tissue, wherein the software program, when executed by a processing arrangement, is configured to cause the processing arrangement to execute the procedures comprising ... ”

Further, independent claim 30 was amended above to recite:

“A software arrangement for identifying characteristics of tissue stored on a tangible computer-accessible storage medium, which, when executed by a processing arrangement, configures the processing arrangement to perform procedures comprising ... ”

Thus, independent claims 24 and 30 are both directed and recite tangible medium, thereby do not cover transitory or non-tangible embodiments, and also are certainly not directed to an abstract idea . Thus, independent claims 24 and 30, and the claims which depend therefrom, which recite tangible computer-accessible storage medium, and software arrangement for identifying characteristics of tissue stored on a tangible computer-accessible storage medium, clearly recite statutory subject matter.

During the Interview, the Examiner agreed that the above-discussed amendments to claims 24 and 30 would overcome the 35 U.S.C. § 101 rejection thereof.

Therefore, for at least the reasons cited above, withdrawal of the rejection of claims 24-31 and 33-35 under 35 U.S.C. § 101 is respectfully requested.

#### **IV. REJECTION UNDER 35 U.S.C. § 102(b) SHOULD BE WITHDRAWN**

Claims 36 and 40-43 stand finally rejected under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent No. 6,002,480 issued to Izatt (the “Izatt Patent”). Applicants respectfully assert that the Izatt Patent fails to teach, suggest or disclose the

subject matter recited in independent claims 36, 41, 43 and 44, and the claims which depend from independent claims 36 and 41.

In order for a claim to be rejected as anticipated under 35 U.S.C. § 102, each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. Manual of Patent Examining Procedures, §2131; *also see Lindeman Maschinenfabrik v. Am Hoist and Derrick*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

The Izatt Patent relates to a method for determining depth-resolved backscatter characteristics of scatterers within a sample, in which a plurality of sets of cross-correlation interferogram data are acquired using an interferometer having a sample arm with the sample in the sample arm. The sample includes a distribution of scatterers therein. The distribution of scatterers within the sample is altered with respect to the sample arm for substantially each acquisition. The cross-correlation interferogram data is average, in the Fourier domain, thereby revealing backscattering characteristics of the scatterers within the sample. (See Izatt Patent, Abstract). According to the Izatt Patent, the backscatter spectrum  $C(k)$  98 is transmitted to a computer 100 for comparison against backscatter data from a 'normal' tissue that is stored in the database 101. (See *Id.*, col. 20, Ins. 46-50).

i. Independent Claims 41 and 43

Applicants' invention, as recited in independent claim 41, relates to an apparatus for identifying characteristics of tissue which comprises, *inter alia*:

... an imaging system adapted to receive axial scan radiation based on the axial scan, receive data relating to the axial scan radiation that is based on at least one of a **spectral domain low-coherence**

**interferometry or an optical frequency domain reflectrometry**, and process the data to automatically identify characteristics of the tissue.

Applicants' invention, as recited in independent claim 43, relates to an apparatus for identifying characteristics of tissue which comprises, *inter alia*:

**... an imaging system adapted to receive the radiation and process unidimensional data relating to the radiation that is based on at least one of a spectral domain low-coherence interferometry or an optical frequency domain reflectrometry to identify characteristics of the tissue.**

As indicated above, the Izatt Patent only describes digital filters that are applied after the light has been detected – clearly the filters of Izatt are not optical filters. It is certainly known that both spectral domain low-coherence interferometry and an optical frequency domain reflectrometry perform ranging by detecting an electro-magnetic radiation as a function of wavelengths of the electro-magnetic radiation. However, the digital filters of the Izatt Patent do not perform such ranging, especially as a function of wavelengths of the electro-magnetic radiation.

Therefore, the Izatt Patent fails to teach, suggest or disclose any imaging system adapted to receive data or radiation relating to radiation that is based on **a spectral domain low-coherence interferometry** and/or **an optical frequency domain reflectrometry**, as explicitly recited in independent claims 41 and 43, respectively.

In the Final Office Action, the Examiner stated that “throughout the specification [thereof, the Izatt Patent describes embodiments] relying on low-coherence interferometry.” (Final Office Action, p. 4, Ins. 10-11). During the Interview, the Examiner pointed to column 18, lines 36-45 of the Izatt Patent as describing such subject matter. However, while the Izatt Patent does indeed describe the use of a low-coherence interferometer 46, this publication has absolutely no disclosure of any reliance on **a**

spectral domain low-coherence interferometry and/or an optical frequency domain reflectrometry, as recited in independent claims 41 and 43. During the Interview, the Examiner agreed that the Izatt Patent does not disclose the usage or reliance on the spectral domain low-coherence interferometry and/or the optical frequency domain reflectrometry. Indeed, exemplary embodiments of *the spectral domain* low-coherence interferometry and the optical frequency domain reflectrometry are described in the specification of the present application, e.g., on page 10, paragraph [0038] to page 11, paragraph [0039] thereof.

Accordingly, at least for the reasons presented herein above, it is respectfully asserted that the Izatt Patent fails to disclose any imaging system adapted to receive data or radiation relating to radiation that is based on a spectral domain low-coherence interferometry and/or an optical frequency domain reflectrometry, as explicitly recited in independent claims 41 and 43, respectively, of the above-identified application.

ii. Independent Claim 36 and Claim 40

As the Examiner shall ascertain, independent claim 36 and claim 40 which depends from independent claim 36 have been cancelled above, without prejudice. Accordingly, the 35 U.S.C. §102(b) rejection of these claims as being anticipated by the Izatt Patent is now moot.

iii. Independent Claim 44

Applicants' invention, as recited in independent claim 44, relates to an apparatus for identifying characteristics of tissue which comprises, *inter alia*:

a radiation source configured to perform an axial scan of the tissue using radiation and deliver radiation to the tissue **via an optical fiber disposed in an insertion device** ... .

In the Final Office Action, the Examiner did not specifically point to any section of the Izatt Patent as allegedly disclosing such subject matter. However, during the Interview, the Examiner alleged that the Izatt Patent discloses the use of fibers and endoscopes with the system described therein, specifically at column 33, lines 40-46 thereof. However, as indicated to the Examiner during the Interview by Applicants' representative, the Izatt Patent fails to disclose that the optical fiber described therein **is disposed in the endoscope** (which the Examiner equated to an insertion device). Indeed, during the Interview, the Examiner admitted that such recited subject matter of independent claim 44 is not disclosed in the Izatt Patent.

In addition, Applicants respectfully assert that there is no disclosure in the Izatt Patent to assist those having ordinary skill in the art to provide the radiation for an axial scan of the sample via **any fibers that are disposed in any endoscope**. Indeed, at the section of the Izatt Patent pointed to by the Examiner, this publication on describes that the measurement device thereof can be coupled to an endoscope, but does not provide any disclose as to how such coupling can be accomplished, and how the axial scan can be performed by transmitting the radiation via fibers that are located within such endoscope.

Accordingly, at least for the reasons presented herein above, it is respectfully asserted that the Izatt Patent fails to disclose a radiation source configured to perform an axial scan of the tissue using radiation and deliver radiation to the tissue **via an optical**



**fiber disposed in an insertion device**, as explicitly recited in independent claim 44 of the above-identified application.

iv. Summary

Thus, for at least these reasons, withdrawal of the rejections of independent claims 36, 41, 43 and 44 and the claims which depend therefrom under 35 U.S.C. § 102(b) is respectfully requested.

V. CONCLUSION

In light of the foregoing, Applicants respectfully submit that all pending claims 1, 5-7, 9, 11-31, 33-35 and 41-44 are in condition for allowance. Prompt consideration, reconsideration and allowance of the present application are therefore earnestly solicited. The Examiner is invited to contact the undersigned if any issues remain which prevent the application from being allowed.

Respectfully submitted,

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